

ELECTRONIC TUBE REFERENCE

18GE6A

Voltage - Triode (with diode, heptode or hexode) electronic tube

CONSOLIDATED TECHNICAL DATA

3 SECTIONS
CONSTRUCTION
DIODE-DIODE-TRIODE

Double-diode high-mu triode combining radio detection, control-voltage rectification, and audio voltage amplification in compact receiving equipment. The paired diodes handle signal and AVC functions while the triode supplies subsequent gain.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	7
NOMINAL HEATER	18 V / 100 mA	PARALLEL HEATER	— / —
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Common cathode	SECTION CONSTRUCTION	Dissimilar

SECTION RATINGS

SECTION1 Diode
No fixed ratings recorded.
Published ratings and characteristics promoted semantically from the approved source.
SECTION2 Diode
No fixed ratings recorded.
Second detector diode section; maximum continuous plate current 1 mA.

SECTION3 Triode	
PLATE RESISTANCE	40000 Ω
TRANSCONDUCTANCE	0.0017 S
AMPLIFICATION FACTOR	70
MAXIMUM PLATE VOLTAGE	150 V
MAXIMUM PLATE DISSIPATION	0.5 W
<i>Published ratings and characteristics promoted semantically from the approved source.</i>	

18GE6A — High-Mu Triode Double Diode

The **18GE6A** is a miniature, multi-unit vacuum tube containing a high-mu triode and two independent diodes within a single envelope. It is designed primarily for detector-amplifier applications in AC/DC radio receivers. The tube features a coated unipotential cathode and a heater designed for series-string operation with controlled warm-up characteristics. The 18GE6A is identical to the older [18GE6](#) except for its controlled heater warm-up time, and it directly replaces the now-obsolete [18GE6](#).

Physical Construction, Base, and Pinout

The 18GE6A is constructed in a compact T-5 1/2 glass bulb outline (JEDEC 5-2) with a miniature button 7-pin base (E7-1). The tube can be mounted and operated in any position.

The physical dimensions of the envelope are:

- **Maximum overall length:** 2-1/8 inches
- **Maximum bulb length:** 1-7/8 inches
- **Maximum diameter:** 3/4 inch

The bottom-view basing diagram (JEDEC 7BT) provides the following pin connections:

Pin	Connection
Pin 1	Grid (G)
Pin 2	Cathode (K)
Pin 3	Heater (H)
Pin 4	Heater (H)
Pin 5	Diode Plate 2 (P2)
Pin 6	Diode Plate 1 (P1)
Pin 7	Triode Plate (P)

Heater Ratings and Warm-up Control

The heater of the 18GE6A is designed for series-string operation in AC/DC receivers. To ensure reliable operation in series circuits, the heater current is tightly controlled, and the tube features a specified warm-up time to minimize voltage surges across other heaters in the string during start-up.

- **Heater Voltage (Average):** 18 Volts
- **Heater Current (Average):** 0.100 Amps (100 mA)
- **Heater Current Limits (Design-Maximum):** 0.094 to 0.106 Amps (94 to 106 mA)
- **Heater Warm-up Time:** 20 Seconds

The heater warm-up time is defined as the time required for the voltage across the heater to reach 80% of its rated voltage (14.4 V) when four times the rated heater voltage (72 V) is applied to a circuit consisting of the tube heater in series with a resistance equal to three times the nominal heater operating resistance. To maintain the heater current within the specified limits, heater voltage supply variations must be restricted.

Electrical Characteristics and Typical Operation

The triode section of the 18GE6A is designed for Class A1 voltage amplification, while the two diode units are intended for AM detection and automatic volume control (AVC) functions.

Class A1 Triode Amplifier Characteristics

At a typical operating point, the triode section exhibits the following characteristics:

Parameter	Value
Plate Voltage	100 Volts
Grid Voltage	-1 Volt
Plate Current	1.0 mA
Plate Resistance	40,000 Ohms
Transconductance	1,700 μ mhos
Amplification Factor	70

As a calculation, multiplying the transconductance of 0.0017 mhos (1,700 μ mhos) by the plate resistance of 40,000 Ohms yields a calculated amplification factor of 68, which closely matches the published nominal amplification factor of 70.

Diode Characteristics

The two diode plates are used for signal detection. For testing purposes, each diode unit is characterized by its average current under a specific test condition:

- **Average Diode Current (Each Diode):** 2.0 mA (with 10 Volts DC applied; test condition only)

Design-Maximum Ratings

The ratings of the 18GE6A are established under the Design-Maximum System. These limits must not be exceeded under the worst-case operating conditions of supply voltage, component tolerances, and environmental variations.

Rating	Maximum Limit
Plate Voltage	150 Volts
Plate Dissipation	0.5 Watt
Diode Plate Current (Each Diode)	1.0 mA
Heater-Cathode Voltage (Heater negative with respect to cathode, total DC and peak)	100 Volts
Heater-Cathode Voltage (Heater positive with respect to cathode, total DC and peak)	100 Volts

Direct Interelectrode Capacitances

The direct interelectrode capacitances of the 18GE6A are measured without an external shield. These values determine the high-frequency performance and isolation between the triode and diode sections:

- **Grid to Plate:** 1.8 pF
- **Input (Grid to Heater + Cathode):** 2.4 pF
- **Output (Plate to Heater + Cathode):** 0.2 pF
- **Grid to Diode No. 2 Plate:** 0.2 pF (Maximum)

Technical Summary

The **18GE6A** is a **7-pin miniature high-mu triode double diode** designed for detector-amplifier service in AC/DC radio receivers. Operating with an **18 V, 100 mA heater**, it features a controlled **20-second warm-up time** to facilitate safe series-string operation. The triode section provides an amplification factor of **70** with a transconductance of **1,700 μ mhos** at a typical plate voltage of **100 V**. The dual independent diodes allow for simultaneous detection and AVC generation. Housed in a **T-5 1/2 envelope**, the 18GE6A serves as a direct, modern replacement for the obsolete [18GE6](#).

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1950 Sylvania

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1950 SYLVANIA

Section 1 · Diode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum Diode Plate Current	1 mA	Each diode

1950 SYLVANIA

Section 3 · Triode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Resistance	40000 ohm	—
Transconductance	1700 μ S	—
Amplification Factor	70	—

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum Plate Voltage	150 V	—
Plate Voltage	100 V	—

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1961 Tung Sol

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1961 TUNG SOL

Section 1 · Diode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Average Diode Current	2 mA	EachDiode;40VApplied

1961 TUNG SOL

Section 3 · Triode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Voltage	100 V	ClassA
Heater Warmup Time	20 s	—

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Current	1 mA	ClassA



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1966 Tung Sol Electronic Tubes 3 of 4

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1966 TUNG SOL ELECTRONIC TUBES 3 OF 4

Section 1 · Diode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum diode plate current	1 mA	WholeTube
Average diode current with 10 V applied	2 mA	Section2

1966 TUNG SOL ELECTRONIC TUBES 3 OF 4

Section 2 · Diode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum diode plate current	1 mA	WholeTube

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Average diode current with 10 V applied	2 mA	Section3

1966 TUNG SOL ELECTRONIC TUBES 3 OF 4

Section 3 · Triode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Triode grid-to-plate capacitance	1.8 pF	WholeTube
Triode input capacitance	2.4 pF	WholeTube
Grid-to-diode plate capacitance maximum	0.2 pF	WholeTube

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum triode plate voltage	150 V	WholeTube
Maximum triode plate dissipation	0.5 W	WholeTube
Triode grid voltage	-1 V	TypicalOperation
Triode plate current	1 mA	TypicalOperation
Triode transconductance	1700 μ S	TypicalOperation
Triode plate resistance	40000 ohm	TypicalOperation
Triode amplification factor	70	TypicalOperation

TUBE TINKER

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